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In Fig. 3, the main crystal has become almost entirely black with a light core. The upper end now blends with the magnetite alongside of it, and the pyroxene on the lower side has become sensibly darker, but still leaves the small crystal of magnetite apparent. The angle of the analyzer was not determined.

In Fig. 4, with an angle of $\pm 135^\circ$ from the first position, the appearance is nearly the same as in Fig. 1; and in Fig. 5 as in Fig. 3.

In Fig. 6, which was taken in the same position of the analyzer as Fig. 4, a new condition was introduced, viz.: a thin plate of selenite was interposed over the slide and between polarizer and analyzer. The effect is a general resemblance to Figs. 1, 2 and 4.

These attempts to utilize the art of micro-photography, for the delineation of the facts as seen through a microscope of moderate power, are yet crude and undoubtedly susceptible of very great improvement, and my only excuse for offering them to the Society in their present unfinished state, is the supreme importance of using every means in our power at the present time to illustrate the conditions of structure of these micro-crystalline (once crypto-crystalline, but now so no longer) igneous rocks; and the hope that the effort to enlist the pencil of the sun in these reproductions, however imperfect it may be in its beginning, may be ultimately successful.

It has not been attempted in this paper to specify *all* the constituents of these traps; to do this a further laborious study of many more slides would be necessary: but only to point out those of most frequent occurrence and of principal importance, which can be recognized in the photographic representations.

ON CREMATION AMONG THE DIGGER INDIANS.

BY W. J. HOFFMAN, M. D.

(*Read before the American Philosophical Society, April 16, 1875.*)

In my last communication, I described, in part, the funeral ceremony of that sub-tribe of Pah-Utes inhabiting the vicinity of Spring Mountain, Nevada, and in looking over my notes made in 1871-2, I find that cremation was also practiced by the Digger Indians (Pah-Utes) living around Marysville, Cal. I would here state, that as far as I have been able to compare the language, or rather dialects, customs, beliefs, ethnology, etc., I am inclined to trace the various sub-tribes of Utes, Pah-Utes (including Diggers) and Gosh-Utes, to one common type. Their bands are scattered over an extent of country, from the northern interior portion of California, southward throughout that State to Owen's Lake, thence irregularly eastward into Utah and Colorado, making a distance between the two limits of about one thousand miles. The dialects are similar to a great extent, except where they have adopted many Spanish words, and these incorrectly pronounced.

Cremation as practised at Marysville, is very similar to the form at Spring Mountain, but to give as clear an idea as possible, I shall repeat it. When an Indian (*e. g.*, a male) becomes dangerously ill, all the remaining ones of that *rancheria* move a short distance away, leaving the sufferer to himself. The wife, or one of his relatives, supplies him daily with food and water. In case death ensues, the male friends of the defunct prepare everything for the usual ceremonies. Some, wrap the corpse into a blanket, and tie it with grass ropes to keep the body stiff and straight; while others gather pine wood, which they arrange into a pile about four feet broad and eight feet long, high enough to contain rather more than a cord, upon which the corpse is placed, with all his favorite valuables, such as bows and arrows, blankets, gun, etc. All the Indians then form a circle around the pile, fire is applied, and several men are stationed near, with long poles, to stir up the coals and burning embers, to hasten the work. When the body has been reduced to the smallest possible quantity or bulk, (ashes or crisp) the widow approaches and scraping up some of the resinous exudation of the pine, covers her face and hair with it, signifying that she will not entertain any proposals of marriage as long as any trace of the resin adheres to her person. The remains are then collected and transferred to a piece of blanket or buckskin, in which they are buried near camp. Their reason for burning all the usual trinkets, etc., of the dead, is the same as at Spring Mountain, *i. e.*, that when the Indian reached the better land (the white man's hunting-ground in the direction of the rising sun), he must be prepared to take part in the chase, as he was wont to do on this earth.

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The Modocs, now so well known, also practised this custom as late as the year 1868, when it was discontinued, they having adopted the mode of burial practised by the tribes living to the north of their territory. The only differences were that the chief mourner would cover his (or her) face and hair with the blood and grease which ran from the burning body, instead of using the resin; and that the ashes were buried, usually, in a small basket made of grass or fine roots, and shaped like a small basin or bowl. The ashes were also buried near camp, from two to three feet below the surface.

In conclusion, I would say, if the name *Digger* is applied to those Pahu-tes who obtain their food to a great measure from the ground such as roots, lizards, etc., etc., why not call those tribes Diggers also who are lower in the scale of humanity, as the Seviches, who live on the Colorado Plateau, near the western terminus of the Grand Cañon. They are decidedly the most loathsome beings who live within the limits of the United States. (I shall report more accurately upon this, and adjoining bands in some future paper.) The Sho-sho-nees and their sub-tribe, the Snakes, also live on roots, herbs, lizards, toads and insects, besides the fish and fowl they are sometimes able to obtain.

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Reading, April 5th, 1875.